

Osteoid Osteoma of the Ulnar Head—An Uncommon Cause of Ulnar Wrist Pain

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Abstract

Keywords

- osteoid osteoma
- upper limb
- ulnar wrist pain
- ulna
- ulnocarpal impingement

Background Osteoid osteoma of the wrist is rare and treatment is still in debate.

Case Description We report on a patient with osteoid osteoma of the head of the ulna, as an unusual cause of pain on the ulnar side of the wrist. The diagnostic delay was 4 years. A previous ulna shortening surgery was performed because of misdiagnosis. The diagnosis was made with bone scan and computed tomography (CT). A surgical resection was performed. The symptoms disappeared, and full range of motion was recovered.

Literature Review Osteoid osteoma on the head of the ulna had never been described before.

Clinical Relevance This case demonstrates that osteoid osteoma can mimic ulnocarpal impingement syndrome.

Nontraumatic ulnar-sided chronic pain can be divided into overuse injuries and chronic degenerative lesions. Osteoid osteomas represent ~12% of all benign bone tumors. They are usually diagnosed in the second decade of life and show a male:female predominance of 2:1.¹ An upper limb location is less frequent, and they often mimic other typical upper limb diseases.² Because of this low frequency and tendency to mimicry, average diagnostic delays of 15–24 months have been described in the literature.^{2,3} In this article we report on a patient with pain in the ulnar side of the wrist due to an osteoid osteoma on the head of the ulna, a cause that has never been described before.

Case Report

A 52-year-old male patient, a manual worker, was referred to our institution due to chronic pain on the ulnar side of the right wrist, dominant side. The pain had gradually appeared 4 years before, with no known reason. The patient had previously been seen at another institution, where he was first treated by immobilization and nonsteroidal anti-inflammatory drugs (NSAIDs), but due to the lack of response to this treatment, which was repeated several times, and a

positive radioulnar index diagnosed by plain X-ray imaging, ulnar shortening surgery was performed (►Fig. 1a,b). This intervention was also ineffective, and the symptoms persisted. A bone scan and computed tomography (CT) scan were requested, and the patient was referred to our institution.

At the first visit the patient described pain on the ulnar side of the right wrist with functional limitation and loss of grip strength. The pain was worse at night and only partially relieved by NSAIDs. Physical examination showed only slight limitation of extension and ulnar deviation of the wrist, the rest of the examination being normal.

On the plain X-ray image there was evidence of the ulnar shortening surgery performed, with no other finding (►Fig. 1b). Bone scan showed an area of increased uptake on the ulnar head (►Fig. 2a). CT showed exact location of the tumor and treatment plan (►Fig. 2b–d). The osteoid osteoma was located on the articular surface of the ulnar head, easily accessible in supination of the forearm (►Fig. 2c) through an anterior approach.

In September 2010, a surgical procedure was performed under tourniquet using an anterior approach to the wrist on the radial border of the flexor carpi ulnaris (FCU) tendon. The

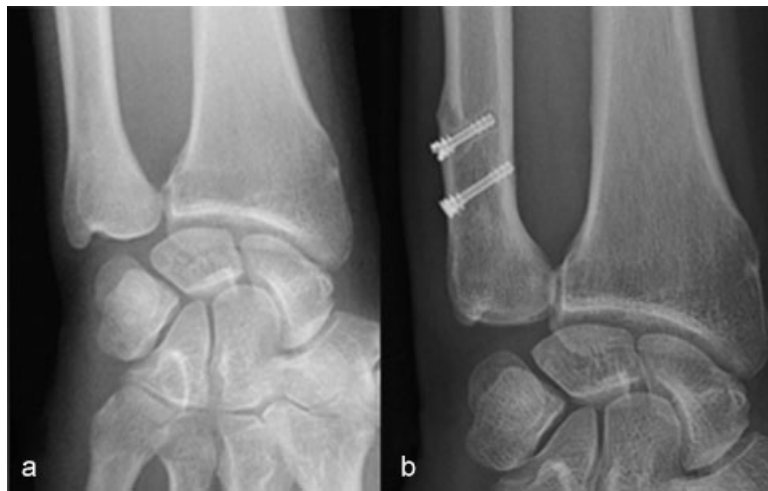


Fig. 1 (a) Initial plain X-ray image showing a positive ulnar variance. (b) Previous ulnar shortening osteotomy.

anterior capsule of the distal radioulnar joint (DRUJ) was exposed and incised horizontally. The nidus was easily visualized with the forearm in supination. The nidus was excised with an osteotome from the head of the ulna, preserving most of the articular cartilage. Curettage of the underlying bone was performed. The capsule was closed by suture. Range of motion was recovered 1 week postoperatively. Pathology was consistent with osteoid osteoma. Complete excision was confirmed by a postoperative CT scan (►Fig. 3a, b).

The patient's outcome was favorable with rapid disappearance of symptoms. Within 3 months he had regained full range of motion. There was no recurrence of pain at 3 years of follow-up.

Discussion

Carroll⁴ was the first to publish 28 cases of osteoid osteoma in upper limbs, mainly in the phalanges, scaphoid bone, capitate

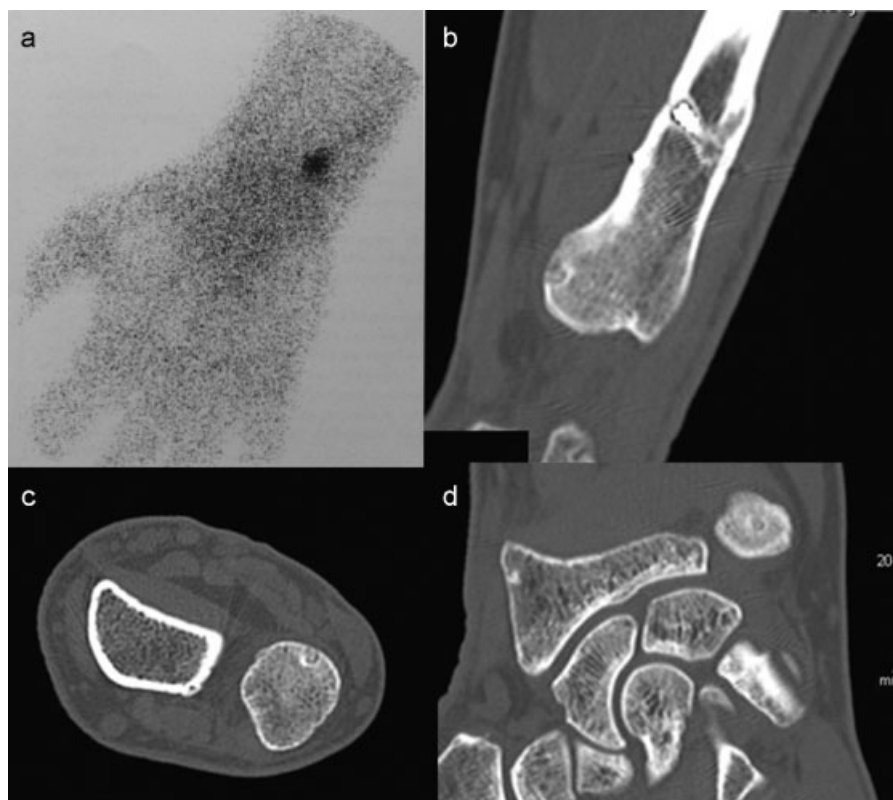


Fig. 2 (a) Bone scan shows an area of increased uptake on the ulnar head. (b–d) CT scan shows exact location of the tumor. The osteoid osteoma is located on the articular surface of the ulnar head, easily accessible in supination of the forearm.



Fig. 3 (a,b) Complete excision was confirmed by a postoperative CT scan.

bone, and hamate bone. Herzberg⁵ described one case of osteoid osteoma on the triquetrum, in which the patient presented with pain on the ulnar side of the wrist, just as our patient did. In 1987, Ambrosia⁶ highlighted the diagnostic challenge that osteoid osteomas of the hand and wrist represent, presenting a series of 19 cases, with an average time of 16 months from the onset of symptoms to diagnosis, of which 14 had undergone previous ineffective surgical treatment, usually secondary to misdiagnosis. Our diagnostic delay was consistent with those presented by the different authors describing average diagnostic delays of 15 to 24 months.^{2,3,7}

Although the clinical presentation of osteoid osteomas in the upper limb is generally constant, with pain as a cardinal symptom partially yielding to NSAIDs, the diagnosis is far from obvious. Its symptoms mimic various classic upper-limb pathologies.⁸ Just as in the case we report, there are numerous reports of patients treated for long periods of misdiagnosis, such as scaphoid fracture, scaphoid necrosis, reflex sympathetic dystrophy, rheumatoid arthritis, De Quervain tenosynovitis, wrist sprains, infections, and even tuberculosis.⁹⁻¹²

In the upper limb, plain X-ray images enable diagnosis in 65% to 75% of cases,^{2,5} but this percentage is surely lower for the wrist and hand. Bone scan is useful for locating increased uptake in a compromised area, but its low specificity does not allow for a precise diagnosis.¹⁻³ Its use is indicated in cases of suspected diagnosis with a normal plain X-ray. CT scan appears as the complementary method to help locate the injury with precision and help toward treatment planning.¹³ Magnetic resonance imaging (MRI) is less specific than the CT scan and tends to overestimate the level of malignancy of lesions. Tonogai discusses the usefulness of dynamic MRI for diagnosis of osteoid osteoma of the trapezoid bone.¹⁴ Differential radiological diagnosis includes stress fracture, intra-cortical abscess, and other benign bone lesions.¹²

In our case the diagnostic delay was greater than the average reported in the literature. Probably the existence of a radioulnar distal index in the plain X-ray made it even more difficult to give an accurate diagnosis. However, we know that

an ulna plus may be asymptomatic, and that pain in ulno-carpal impingement is of a mechanical nature, and that we should look for signs of that conflict at carpal level.

Osteoid osteoma treatment may be traditional, with the use of NSAIDs for pain control. While these may be good for cardinal symptom management, there are no long-term studies proving their effectiveness. Surgical treatment is indicated in cases of medical treatment failure, lack of tolerance to medical treatment, or diagnostic uncertainty. Recently CT-guided percutaneous resection and radiofrequency ablation have shown good results, comparable to traditional surgical resection, with lower complication rates and shorter recovery times.¹ The use of radiofrequency also shows good results, 65% to 100% success, although no published series have reported on osteoid osteomas located in the wrist and few on osteoid osteomas located in the upper limb.¹⁵⁻¹⁷ So its usefulness in upper limb is not yet clear. Furthermore, a safety margin of at least 1 cm is recommended between the probe and structures at risk,¹⁸ so CT-guided percutaneous resection would appear unsuitable for the wrist. Recently, Roukos¹⁹ has published on thermocoagulation ablation of uncomplicated osteoid osteomas of the *lunate* bone and the head of the ulna, but in that article the appearance of the osteoid osteoma was atypical, and the CT finding was also compatible with intraosseous mucoid cysts. Furthermore, there was no pathologic study. Surgical resection remains a reliable treatment for osteoid osteomas located in the wrist and hand.²⁰⁻²²

Conclusion

The case here reported is a good example of the diagnostic challenge osteoid osteomas of the upper limb represent. It is important to consider this uncommon cause of wrist pain to reduce reported diagnostic time delays for this condition, especially in the presence of difficulty to explain pain or when a clinical-radiologic dissociation exists. CT appears to be the complementary method to help locate the injury with precision and help toward treatment planning. Surgical resection and curettage represents a safe and reliable treatment.

Conflict of Interest

None

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